

REMARKS

Applicant respectfully requests entry of the above Preliminary Amendment to place this Patent Application in better form for examination and prosecution before the U.S. Patent and Trademark Office.

The claims have been amended to eliminate multiple dependent claims and to more definitely and fully claim the subject matter of Applicant's invention. Applicant urges that the above Preliminary Amendment introduces no new matter into this Patent Application.

Applicant sincerely believes that this Patent Application is now in condition for examination and prosecution before the U.S. Patent and Trademark Office.

Respectfully submitted,



Douglas H. Pauley
Registration No. 33,295

Pauley Petersen & Erickson
2800 West Higgins Road; Suite 365
Hoffman Estates, Illinois 60195
TEL (847) 490-1400
FAX (847) 490-1403

ELECTRODE PACK

BACKGROUND OF THE INVENTION
Field of the Invention

This invention relates to an electrode pack with at least two flat electrodes to be placed against a patient, which have flat contact areas [provided] with a gel on an electrode body, as well as connecting cables, and [are provided with] airtight connecting means. ^{connection}

Electrodes [of this type] are used in particular in connection with defibrillators and need to be always capable of functioning, [in particular] if they are [intended] to be always rapidly ready for action in connection with automatic external defibrillators (AEDs). The electrode pack is intended to assure that [the] contact areas are maintained in a functioning status as long as possible. Such an electrode pack is disclosed [in USP] 5,402,884, and similar ones also [in USP] 5,579,919 and [USP] 6,048,640. Here, the packaging seals the two electrodes in an airtight manner, and the cable is also conducted through the packaging in an airtight manner.

One of this SUMMARY OF THE INVENTION

The object of the invention is [based on making available] an electrode pack of the type mentioned [at the outset], which makes possible a simple manipulation and wherein packaging material is saved.

This object is attained [by means of the characteristics of claim 1. In accordance] with [this] it is provided that the closing means have sealing means [which] surround the [contact areas and [which] are brought into contact in an airtight manner with the electrode bodies, wherein the connecting cables are conducted out of the electrode bodies outside of the sealing means] apparatus

Thus [With these steps] the electrodes can be [simply] separated and removed from the packaging, wherein the connecting cables are not in the way and need not be removed

separately from the packaging material. With this construction it is also [easily possible] to save packaging material.

[An] ^{One} embodiment [which] is advantageous [in regard] to [handling] and the construction [consists in that the] sealing means [that] have an encircling seal ring arrangement, [which is] connected in an air- tight manner by connecting means with both electrodes and can be pulled off.

[Here, an] ^{One} arrangement [which] is advantageous for the arrangement and handling ^{because} [consists in that] the seal ring arrangement has at least one sealing bead formed on each of the facing sides of the electrode bodies which contain the contact areas, which [have been brought into congruence in regard] ^{are congruent with respect} to the two electrode bodies and are connected with each ^{other} by the connecting means [or that] at least one seal ring, which encircles the contact areas, is arranged between the facing sides of the two electrode bodies and is connected with the electrode bodies on each of its two sides facing the electrode bodies by connecting means. [In this way] Thus the electrodes are also maintained in a defined position facing each other.

If [it is provided that] at least one intermediate layer is arranged between the two contact areas facing each other, the contact areas are additionally protected.

[In another] A further advantageous embodiment for handling [and] the construction [consists in that the] seal ring arrangement [that] is a part of a foil covering the contact area, which forms at least one insulating intermediate layer between the contact areas facing each other, wherein each part is connected with an associated electrode body by a respective connecting means. The packaging material can be easily removed when the electrodes are separated.

Handling is further [aided in that] at least one of the two electrodes [is provided with] ^{simplified because} a gripping tongue for pulling the two electrodes apart.

{In [this case an advantageous] embodiment [consists in that] the at least one gripping tongue is connected to the seal ring arrangement, or to the at least one intermediate layer.

The functionally ready state of the electrodes is [furthermore] assured [in that] the intermediate layer is integrated as the active means for an electrical electrode test. *because*
 This is BRIEF DESCRIPTION OF THE DRAWINGS view
 [The] invention [will be] explained in greater detail in [what follows by means of] exemplary embodiments, making reference to the drawings [Shown are in], wherein:

Fig. 1A, [a schematic representation of an electrode pack in cross section,]; shows

Fig. 1B, [a portion of an electrode pack in Fig. 1A with a modified sealing arrangement,]; shows a top view of

Fig. 2, [the electrode pack in Fig. 1A in a view from above,]; and shows

Fig. 3, [a further exemplary embodiment of an electrode pack in a view from the side,]; shows one

DESCRIPTION OF PREFERRED EMBODIMENTS

Figs. 1A, 1B, 2 and 3 show different representations of an electrode pack 1, having a first and second electrode 2, 2', each of which has an electrode body 2.1, 2.1' with a contact area 2.2, 2.2' with a contact layer to be placed against a patient. The contact areas of the two electrodes 2, 2' face each other and are preferably separated by [means of] an intermediate layer 6. Connecting cables 5 for a connection with a control device [not represented] of a defibrillator are connected to each of the two electrode bodies 2.1, 2.1' for charging the patient with a stimulating electrical voltage and, if desired, also to perform a functional test for determining the functional capability of the electrodes 2, 2' even in the packaged state. The contact areas 2.2, 2.2' are closed in an airtight manner toward the exterior by [means of] a sealing arrangement with sealing means 7 and connecting means 7.1, so that the

drying out of the gel layer, which is customarily provided in the contact area 2.2, 2.2', is prevented, and the capability of the contact area to function is assured over a long period of time.

The sealing means 7 [have] ^{comprise} a seal ring, which encircles the respective contact area 2.2, 2.2' in an airtight manner, as [can be seen] ^{shown} in Fig. 2, for example. The connecting cables 5 are conducted out of the respective electrode bodies 2.1, 2.1' outside of the seal ring. [In this case] ^{Thus} the sealing means 7 can be embodied in different ways, as shown in Figs. 1A to 3.

In accordance with Fig. 1A, a bead-like or lip-like seal ring is formed on, glued to or welded to each of the facing sides of the electrodes 2, 2' of the electrode pack 1, on which contact areas 2.2, 2.2' are also located. In the packaged state, the two seal rings of the respective electrodes 2, 2' are congruently connected with each other in their areas adjoining each other. Various connecting means 7.1 are conceivable for the connection, which make possible the simple pulling of the electrodes 2, 2' apart from each other for their use, for example an adhesive, or their being welded together, or also a connection with a groove/protrusion arrangement, wherein the seal rings are made of a suitable elastic sealing material, for example silicon. [By means of] ^{With} gripping tongues 4 attached to the electrode bodies 2.1, 2.1' or to the sealing arrangement 7, which protrude laterally over the edges of the electrodes 2, 2', the two electrodes can be easily grasped and pulled apart from each other. The connecting means 2.1 are [here] matched [in such a way] ^{so} that they make possible the simple pulling apart and [on the other hand,] ^{also} assure an airtight closure. It is also possible to [provide] ^{arrange} several encircling seal rings [arranged] next to each other.

Fig. 1B shows a sealing device which is modified from the exemplary embodiment of Fig. 1A, wherein the encircling sealing means 7 are embodied as a sealing

element arranged between the facing sides of the two electrodes 2, 2' and are glued together or welded together with the adjoining sides of the electrode bodies 2.1, 2.1'. Here, too, a sort of groove/protrusion connection as in the first mentioned exemplary embodiment is possible. The connecting cables 5 are also conducted out of the respective electrode bodies 2.1, 2.1' outside of the sealing means 7. Moreover, gripping tongues 4 are advantageous in the manner mentioned above.

With the further exemplary embodiment represented in Fig. 3, the sealing means 7 are applied to a cover foil of the two contact areas 2.2, 2.2' and form, for example, a part [thereof] which [has been] formed thereon in one piece, or is welded or glued [thereon]. In this case the cover foil, which [constitutes] the intermediate layer 6, can be embodied as a single layer with two edge areas separated from each other, or with two layers, each with an edge area, wherein the two layers are advantageously connected with each other for maintaining their positions. The sections projecting laterally past the respective contact areas 2.2, 2.2' are connected with the respective electrode bodies 2.1, 2.1' by connecting means 7.1 and [constitute] form the sealing means 7. Here, too, the connecting means 7.1 can be, for example, a suitable adhesive, or a welded connection for an airtight closure. Regarding the attachment of the gripping tongues 4 and the connection with the connecting cables 5, the electrode pack 1 is preferably embodied in accordance with the previously mentioned exemplary embodiments. If, in case of a dual-layer structure of the intermediate layer 6 [being] made of a foil-like packaging material 3, the connection between the two layers is stronger than the connection of the sealing means 7 with the electrode bodies 2.1, 2.1', the packaging material of the two electrodes 2, 2' is separated from at least one electrode body 2.1, 2.1' and can be easily removed from the electrodes.

With all mentioned exemplary embodiments, the intermediate layer 6 can be [advantageously] used as a dielectric device in order to perform an automatic electrode test from time to time and to register and assure the functional dependability of the electrodes 2, 2'.